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E04R2/78C



COMMONWEALTH OF AUSTRALIA

PATENT SPECIFICATION (21) **30,388/71**

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Class (52) 81.3.

Int. Cl. (51) E04b.

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Complete Specification
entitled (54)

IMPROVEMENTS IN METAL WALL FRAME STRUCTURES

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Actual Inventor (72) MARK NORTH.

Related Art (56)	44,739/68	81.3; 54.7; 78.9.
	295,730(37,716/63)	81.3; 73.2.
	410,304(1335/66)	81.3.

The following statement is a full description of this invention, including the best method of performing it known to us.

X437-88-3D-14P.C.

W. C. Murray, Government Printer, Canberra

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This invention has been devised to provide an improved metal wall frame structure of interlocking components.

Such frames have wide application in the field of new building construction as well as in the field of internal partitioning in existing buildings.

Metal wall frames are not new but hitherto such frames have had limited commercial appeal for one or both of the following reasons, expensive components - often due to the need for expensive component manufacturing equipment - and time consuming and therefore expensive erection procedures necessitating connecting members, e.g. bolts and nuts or rivets or welding equipment.

A frame made according to this invention uses simple components which are readily mass produced in a manner whereby they can be assembled by interlocking thereby providing economies over metal wall structures known to this time. The frame includes the usual accessory parts of other material, e.g. timber to complete the wall structure.

Basically the metal frame of this invention comprises wall plates, floor plates, studs and noggings; said wall and floor plates being flat web channel section members with inturned flanges on the free ends of the channel legs; said studs being flat web channel section members with inturned flanges on the channel legs and slots in the legs juxtaposed the inturned flanges of the wall and floor plates respectively with the end parts of

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the studs joggle to register with and interlock with the channel legs of the wall and floor plates, the inturned flanges of the wall and floor plates engaging the slots in the studs; a plurality of through slots in the webs of said studs to receive said noggings; said noggings being angle section members adapted to pass through said slots and to be frictionally held therein.

The metal wall frame of the invention is described in practical detail with reference to the annexed drawings wherein;

Fig. 1 is a fragmentary perspective view of two conjoined wall frames.

Fig. 2 is an exploded perspective view of a stud and floor plate..

Fig. 3 is a fragment of a stud end prepared for joggling.

Fig. 4 the stud end joggled with an anchor wedge therein positioned for expanding and

Fig. 5 the anchor wedge expanded.

Fig. 6 is a perspective view of the anchor wedge.

Fig. 7 shows one method of ^{inserting} ~~joggling~~ a stud in a wall or floor plate.

Fig. 8 is a fragment of a noggling showing end tags.

Fig. 9, 9a and 9b illustrate the multi-sided through slots in the webs of the studs and the several positions in which the noggings can be held therein.

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Referring to the drawings the wall plates 1 and the floor plates 2 are channel section members each having a flat web 3 and substantially parallel legs 4 having inturned flanges 5 on the free ends of the legs 4.

The studs 6 each have a flat web 7 and substantially parallel legs 8 with inturned flanges 9 on the free ends of the legs. The end parts of the legs 8 are stepped inwardly as at 10 by crimping the web 7 as at 11 so that their spacing is equivalent to the internal spacing of the wall and floor plate legs 4. Slots 12 are made in the legs 8 juxtaposed the inturned flanges 5 on the legs 4. That is to say the distance between the slots 12 and the respective ends of the studs 6 is substantially equivalent to the distance between the flanges 5 on the legs 4 and the webs 3 of the wall and floor plates. The ends of the studs 6 can thus be joggled to register with the channel legs 4 of the wall and floor plates 1 and 2. When so registered slots 12 engage the flanges 5 and anchor wedges in the form of inverted "V" plates 13 (see Figs. 4, 5 and 6) preferably having "V" ends 14, are used to force the end parts of the legs 8, preferably with the aid of a hammer, into interlocking engagement with the channel legs 4 of the wall and floor plates.

Each stud 6 has a number of through slots 15 formed in the web 7, the number corresponding to the number of noggings required in a particular wall frame. Each slot is in the form of a ~~hexagon~~^{pentagon} having opposed "V" ends 16 joined by instepped walls 17. Each noggling is an "V" section member

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18 having outer turned legs 18a and slots 19 in each leg located to engage opposite sides of the respective slots 15 and to be frictionally held thereby. The stops 20 formed by the interstepped walls 17 form abutments to retain each nogging in a selected position. By referring to Figs. 9 it will be seen that the ^{hexagon}~~hexagon~~ slot provides six alternative settings for a nogging. The shape of the slot may be varied to provide a standard setting. The ends of the noggings which terminate at a wall, door or window frame are provided with tabs 21 which can be bent to bear against an adjacent stud to form an interlock.

It will be seen that the entire structure described above which forms the main components of a wall frame can be fabricated without the use of bolts, rivets or welding equipment. Sills such as 22, lintels 23 corner plates 24 and stays 25 may be secured by bolts or rivets but these are minor components in the construction and erection of a wall frame.

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The claims defining the invention are as follows:

1. A metal wall frame of interlocking components comprising basically wall plates, floor plates, studs and noggings; said wall and floor plates being flat web channel section members with inturned flanges on the free ends of the channel legs; said studs being flat web section members with inturned flanges on the channel legs and slots in the legs juxtaposed the inturned flanges of the wall and floor plates respectively with the end parts of the studs joggled to register with and interlock with the channel legs of the wall and floor plates, the inturned flanges of the wall and floor plates engaging the slots in the studs; a plurality of through slots in the webs of said studs to receive said noggings; said noggings being angle section members adapted to pass through said slots and to be frictionally held therein.
2. A metal wall frame as claimed in claim 1 including anchor wedges adapted to force the end parts of the studs into interlocking engagement with the channel legs of the wall and floor plates.
3. A metal wall frame as claimed in claim 1 wherein the slots in the studs to receive the noggings are each in the form of a ^{polygon} ~~hexagon~~ having opposed "V" ends joined by instepped walls and wherein said noggings have slots in each wall adapted to engage opposite sides of the respective slots and to be frictionally held thereby.
4. A metal wall frame as claimed in claim 1 wherein the ends of the noggings which terminate at a wall, door or window frame are provided with tabs which can be bent

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to bear against the adjacent stud to form an interlock.

5. A metal wall frame constructed as described
with reference to the annexed drawings.

DATED this 16th day of June, 1971.

JOHN LYSAGHT (AUSTRALIA) LIMITED

by its Patent Attorneys,

ARTHUR S. CAVE & CO.

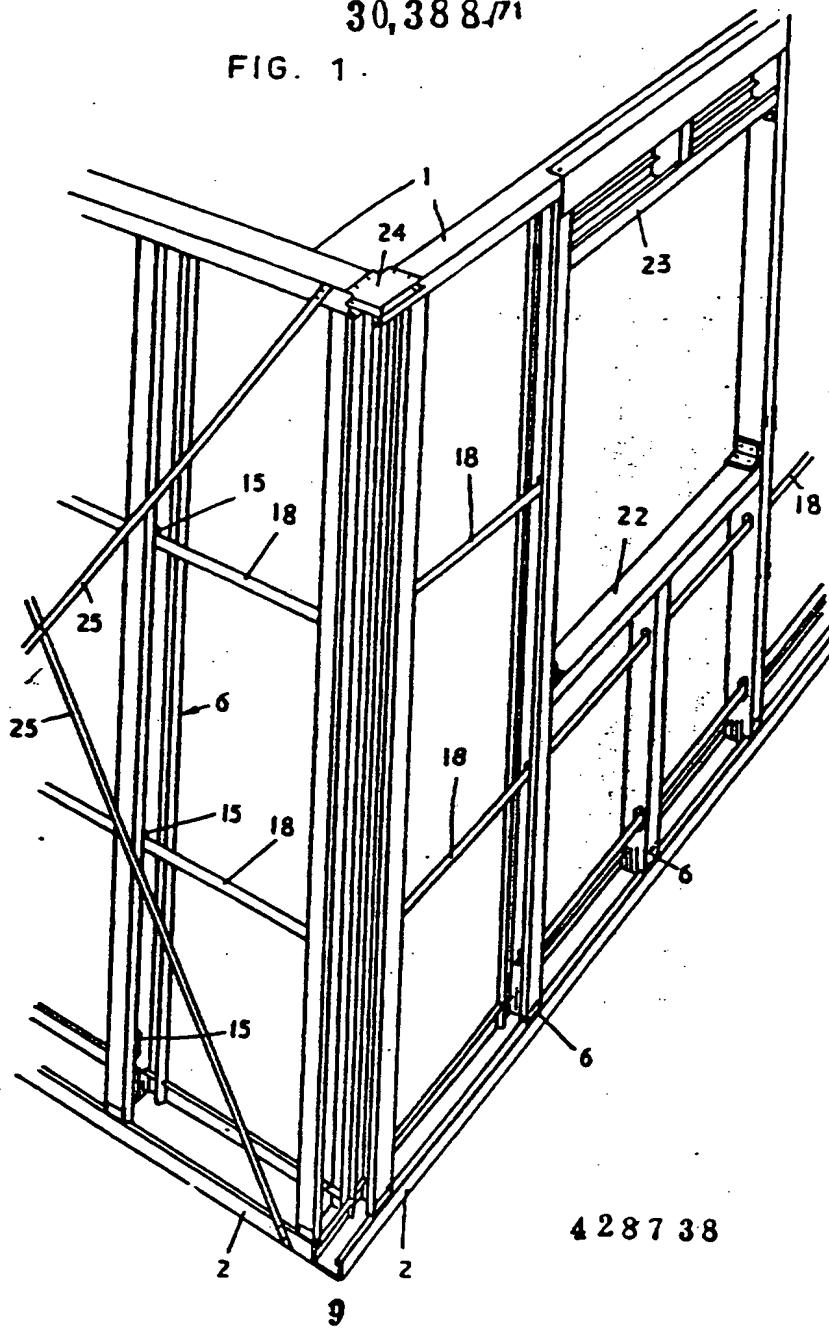
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FIG. 1.



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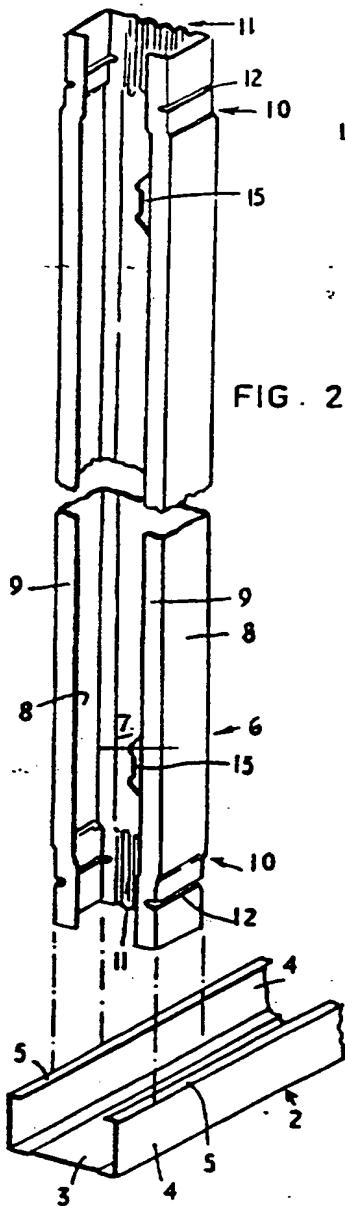


FIG. 2.

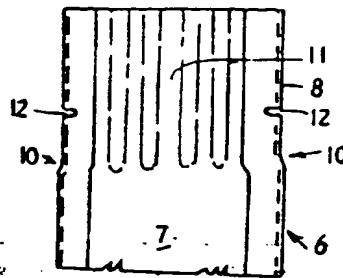


FIG. 3.

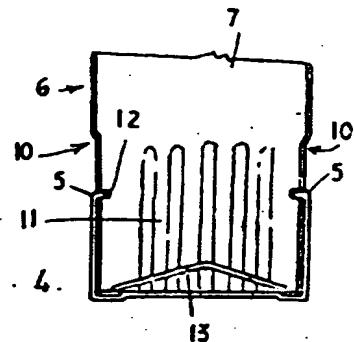


FIG. 4.

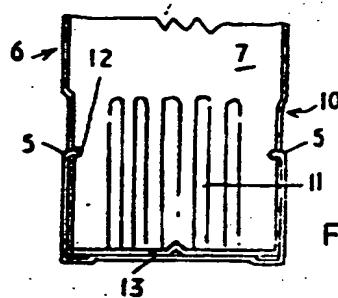


FIG. 5.

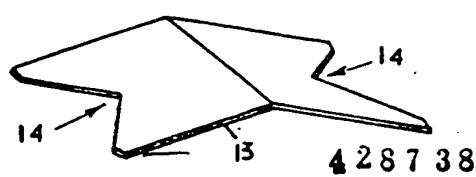


FIG. 6.

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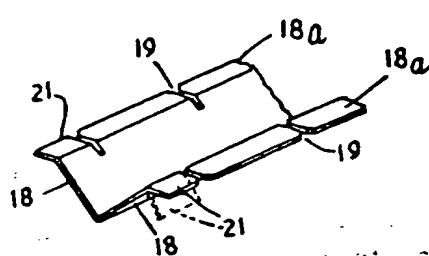


FIG. 8.

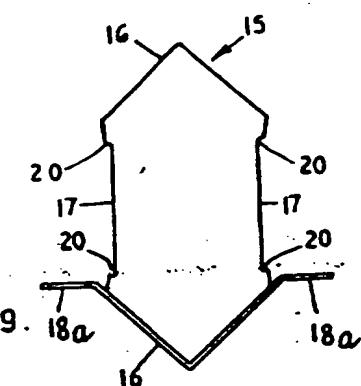


FIG. 9. 18a

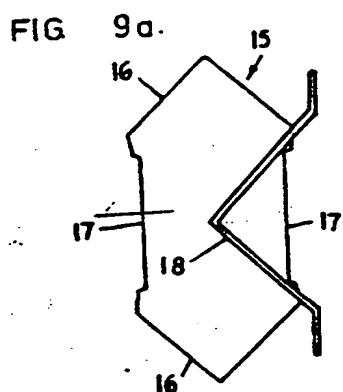


FIG. 9a.

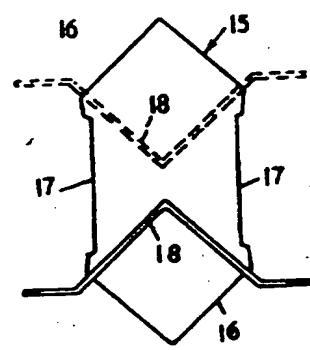
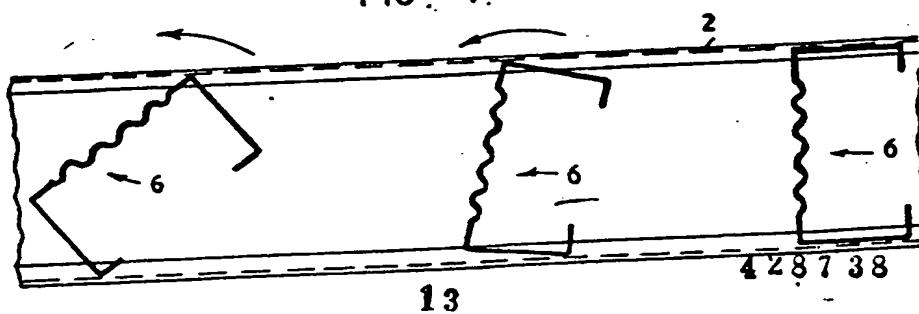


FIG. 9b.

FIG. 7.



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